related information for the CCs from the eNB. In one embodiment, the competition related information may include an occupation risk index and competition index, as discussed above. The list of CCs received from the eNB may include non-configured CCs and/or configured but non-activated CCs.

[0061] Apparatus **10** may be further controlled by memory **14** and processor **22** to select one or more proper CCs from the list of CCs based on certain rules. Examples of the rules that may be taken into consideration by the apparatus **10** in selecting the proper CCs include, but are not limited to, the following: non-configured CCs have priority to configured but non-activated CCs for the apparatus **10** to reuse; the CCs with less collision risk are more preferred; the CCs with smaller occupation risk index are more suitable for continuous transmission and CCs with larger occupation risk index are more suitable for opportunity transmission; and the apparatus **10** combines both the occupation risk index and the competition index into its consideration.

[0062] In another embodiment, apparatus **10** may be an eNB in in a hybrid D2D and cellular network. In this embodiment, apparatus **10** is controlled by memory **14** and processor **22** to receive, from a D2D UE, related information for interfering cellular UE(s) in the hybrid network. The related information for the interfering cellular UEs may include, for example, the kind of interference information, e.g. CC index, SINR and/or the ID(s) of the interfering cellular UE(s).

[0063] Apparatus **10** may then be controlled by memory **14** and processor **22** to determine reusable CCs for the D2D UE to utilize by, for example, comparing configured and activated CCs of the interfering UEs with all CCs the apparatus **10** has available. Apparatus **10** may be further controlled by memory **14** and processor **22** to transmit, via transceiver **28**, a list of the reusable CCs and competition related information for the CCs to the D2D UE. In one embodiment, the competition related information may include the occupation risk index and the competition index, and the list of CCs may include non-configured CCs and/or configured but non-activated CCs.

[0064] FIG. **6** illustrates an example of a flow diagram of a method, according to one embodiment of the invention. The method includes, at **600**, obtaining related information for interfering cellular UE(s) in the hybrid network. At **610**, the method includes reporting the related information for the interfering UE(s) to an eNB. The method may then include, at **620**, receiving a list of CCs and competition related information for the CCs from the eNB. At **630**, the method may include select one or more proper CCs from the list of CCs according to certain rules.

[0065] FIG. **7** illustrates an example of a flow diagram of a method, according to another embodiment. The method includes, at **700**, receiving, from a D2D UE, related information for interfering cellular UE(s) in the hybrid network. At **710**, the method may include determining reusable CCs and competition related information for the D2D UE to utilize. In one embodiment, the determining of the reusable CCs includes comparing configured and activated CCs of the interfering UEs with all CCs the apparatus **10** has available. The method may further include, at **720**, sending a list of the reusable CCs and competition related information for the CCs to the D2D UE.

[0066] In some embodiments, the functionality of any of the methods described herein, such as the method of FIGS. **6** and **7**, may be implemented by software and/or computer program code stored in memory or other computer readable or tangible media, and executed by a processor. In other embodiments, the functionality may be performed by hardware, for example through the use of an application specific integrated circuit (ASIC), a programmable gate array (PGA), a field programmable gate array (FPGA), or any other combination of hardware and software.

[0067] Embodiments of the invention provide a system, apparatus, and/or method to identify proper carriers including non-configured and configured but non-activated CCs which can be reused for D2D communication. Several distinct advantages are provided according to certain embodiments. For example, some advantages include achieving efficient resource reuse since the non-configured and configured but non-activated carriers are not left unused. Additionally, no matter when and where D2D UEs reuse these CCs, little interference would be imposed on cellular and D2D communication since the CCs are semi-static scheduled. Embodiments, therefore, result in an improved user experience.

[0068] The described features, advantages, and characteristics of the invention may be combined in any suitable manner in one or more embodiments. One skilled in the relevant art will recognize that the invention may be practiced without one or more of the specific features or advantages of a particular embodiment. In other instances, additional features and advantages may be recognized in certain embodiments that may not be present in all embodiments of the invention.

[0069] One having ordinary skill in the art will readily understand that the invention as discussed above may be practiced with steps in a different order, and/or with hardware elements in configurations which are different than those which are disclosed. Therefore, although the invention has been described based upon these preferred embodiments, it would be apparent to those of skill in the art that certain modifications, variations, and alternative constructions would be apparent, while remaining within the spirit and scope of the invention. In order to determine the metes and bounds of the invention, therefore, reference should be made to the appended claims.

1-32. (canceled)

33. An apparatus, comprising:

at least one processor; and

at least one memory including computer program code,

the at least one memory and the computer program code configured, with the at least one processor, to cause the apparatus at least to

obtain, in a hybrid device-to-device (D2D) and cellular network, related information for interfering cellular user equipment;

report the related information for the interfering cellular user equipment to an evolved node B (eNB);

receive a list of component carriers and competition related information for the component carriers; and

select at least one proper component carrier from the list of component carriers according to certain rules.

34. The apparatus according to claim **33**, wherein the competition related information comprises an occupation risk index and a competition index.

35. The apparatus according to claim **34**, wherein the occupation risk index comprises a parameter to indicate a risk of a situation change of the component carriers.

36. The apparatus according to claim **34**, wherein the competition index comprises a parameter that estimates a competition level for the component carriers.